

Policy Brief

Restoring soil fertility in Senegal

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For sustainable agriculture

In Senegal, soil degradation affects 34% of land, i.e. a surface area of 6,860,900 ha (UNCCD & MEDD 2015).

It is now accepted that conventional agriculture leads to soil degradation, even though natural factors are also involved. Wind and water erosion, salinization of the land, the absence of fallowing and crop rotation (monoculture), the abusive and unregulated use of chemical fertilizers and pesticides, and the low level of organic inputs (manure, compost, crop residues) are all factors that contribute to land degradation.

As a result, we need to work to restore and conserve soil fertility. This refers to a set of practices that ensure the nutritional needs of plants and guarantee productivity without compromising the environment.

Improving soil fertility would therefore make it possible to sustainably increase agricultural production as part of the agroecological transition of farming systems, which are predominantly family-based and rural.

Since 2012, Senegal has been committed to soil fertility management through the creation of a National Strategic Investment Framework for Sustainable Land Management (CNIS/GDT).

Although the political context seems favorable and initiatives to restore and manage soil fertility are being developed by farmers at local level, there are still major constraints on the widespread use of these initiatives and soil fertility management practices in agricultural areas, which limit their impact.

Overcoming the constraints and scaling up soil restoration practices based on agroecology principles requires more sustained support from the State, and a commitment from a number of players.



La Dynamique pour une Transition Agroécologique au Sénégal (DyTAES)

is a network of farmer and consumer organizations, NGOs, research and training institutions, local elected representatives and businesses.

From 23 to 26 November 2021, DyTAES supported the organization of the 3rd International Conference on Sustainable Intensification (CID). From 7 February to 15 March 2022, DyTAES consulted thousands of people in 14 localities spread across Senegal's 6 eco-geographical zones.

This note summarizes the recommendations made to the State and local authorities at the end of the caravan and the CID.

www.dytaes.sn

dytaes2020@gmail.com

Tel: +221 33 889 34 39

Soil fertility degradation in Senegal

Although climatic and natural factors also come into play, soil degradation is above all a consequence of human activities, including conventional agriculture.

Soil degradation manifests itself first and foremost in a decline in fertility, which in turn reduces agricultural yields. One of the main components of soil fertility is its organic matter content. However, the use of chemical fertilizers, the disappearance of fallow land, slash-and-burn cultivation, bush fires and massive land clearing are gradually depleting the soil of organic matter.

This depletion is exacerbated by the low level of recycling of biomass and nutrients in agrosystems. Crop products and residues (rice straw, rice bran, groundnut hulls, etc.) are exported to the towns for other uses or for livestock, and the incorporation of manure and compost into the fields is not widespread.



Soil degradation also takes the form of pollution by chemicals that are toxic to humans and the environment. In market-growing areas, this pollution results from the extensive use of pesticides (products used to combat pests). As well as causing human health problems, these products affect biodiversity by eliminating organisms that play a regulatory role and contribute to the natural balance.

Soil degradation is also linked to a net loss of cultivable soil due to wind and water erosion. It takes several hundred years to create one centimeter of fertile soil, which can be washed away in a single rainy or windy spell if the soil is left bare.

Finally, soil degradation in Senegal is reflected in salinization. This phenomenon is caused by marine invasions, capillary rise of salts and the transport of salty alluvial deposits. The downward trend in rainfall, combined with rising temperatures, is accelerating the phenomenon. The accumulation of salt in the soil is also caused by poor irrigation practices and over-pumping of groundwater for agricultural, domestic and industrial uses, leading, among other things, to the advancement of the saline wedge.

The State's political commitment to combating soil degradation

Senegal is committed to soil fertility management through various international mechanisms such as the United Nations Convention to Combat Desertification (UNCCD), the Convention on Biological Diversity (CBD) and the United Nations Framework Convention on Climate Change (UNFCCC).

Senegal has also set up a number of national programs aimed at combating land degradation, such as the National Soil Restoration and Improvement Program, the National Grazing Land Management Program, the National Program for the Recovery and Development of Saline Land, the National Program for the Development and Sustainable Management of Forests, and others.

Furthermore, in 2012, the implementation of the Sustainable Land Management Project led to the creation of a National Strategic Investment Framework for Sustainable Land Management (CNIS/GDT), the main objective of which is to improve agricultural productivity and to improve and generalize SLM.

More recently, the Plan Sénégal Émergent Vert (Green Senegalese Emerging Plan) has placed the issue of agricultural soil fertility management on the national political agenda through the ambition of sustainable reforestation of the national territory.

Local initiatives to restore soil fertility

In the areas consulted, farming communities are developing agro-ecological initiatives aimed at restoring and conserving soil fertility:

Governance instruments for natural resources

Soil defence and restoration committees, joint village committees (CVP), the Observatoire sur le Territoire (OSTER), the Coalition AgroEcologique Communautaire (CAEC), the Commissions Environnement Élargies (CEVE), environmental protection associations and local forest management agreements are multi-stakeholder governance bodies whose actions help to combat soil and environmental degradation.

They organise: i) the installation of stone barriers, retaining dykes and other soil protection and restoration measures, ii) awareness-raising campaigns against illegal tree pruning, iii) community training in techniques for fighting bush fires, the use of groundnut shells, etc. These are all activities carried out by local associations for the protection of the environment.

These are all activities undertaken by communities to promote soil fertility.

Initiatives to recycle waste for the production of bio-fertilizers

Some local authorities are setting up waste sorting and recovery centers, or waste management cooperatives. Organic matter is transformed by composting or methanization. Producers are trained in these techniques and in the use of organic matter in crops.

Some communities have adopted inoculum production technology. They produce, use and market bio-fertilizers based on mycorrhizae.

Experiences in forest cover restoration

In a number of communes in Senegal, local players have launched initiatives to restore tree cover: forest fencing, Assisted Natural Regeneration (ANR), mangrove regeneration and the introduction of improved fireplaces are all ways of exploiting forest resources rationally and ecologically, ultimately restoring degraded soils.

These local initiatives are reinforced by educational activities and the promotion of environmental citizenship in favour of the agroecological transition.

The challenge of scaling up soil fertility restoration and management practices

Although the political context seems favorable and soil restoration initiatives abound in the regions, there are major constraints that are holding back widespread improvement in soil fertility.

On the one hand, farmers lack technical support and guidance. Secondly, farmers who commit to sustainable soil management are not subsidized, recognized, valued or remunerated by the market.

The main challenge is therefore to give greater recognition and support to the initiatives developed by farmers at local level to combat the degradation of agricultural land.

This is why DyTAES is supporting local players who are implementing agroecological transition initiatives, particularly in the field of soil fertility management.

Removing constraints and scaling up these initiatives requires greater support from the State and a commitment from other players to increase agricultural productivity based on soil fertility while preserving the environment.



Recommendations

At the 3rd Conference on Sustainable Intensification (CID), the various stakeholders called for: (i) the scaling-up of Sustainable Land Management practices and initiatives; (ii) the promotion of trees in agricultural production systems to restore soil fertility and maintain favorable biodiversity; (iii) the development of agriculture-livestock synergies on farms and in the regions; and (iv) the resolution of problems in a cross-cutting, holistic and interdisciplinary manner for integrated soil fertility management.

In addition, DyTAES has worked with local stakeholders to draw up recommendations for the State and local authorities to support the scaling-up of soil fertility restoration and management initiatives.

Strengthen the technical skills of players

On a technical level, the aim is to strengthen the logistical resources and capacities of the government's technical services, community relays and farmers in soil conservation and restoration techniques and agroecological practices in general.

Develop an incentive policy to promote soil fertility

The government must step up its policy of subsidizing organic fertilizers and bio-pesticides, and ensure that this benefits family farms. It must also develop strategies to reduce the drudgery of agricultural soil fertility management practices. For example, appropriate mechanization could encourage the use of Zaï and the production of compost.

In addition, the subsidy policy must be broadened to promote practices that preserve soil fertility, such as integrating farming and livestock rearing, mulching, crop rotations and associations, planting defences, firebreaks, reforestation, anti-salt dykes and so on.

Reform and apply the Forestry Code

As far as legal and regulatory considerations are concerned, the State must guarantee strict application of the Forestry Code to effectively combat abusive tree felling, and recognize the status of trees resulting from Assisted Natural Regeneration (ANR) to encourage the maintenance of fertilizing trees in agrosystems.

Facilitate the development of spaces

Local and regional authorities must ensure that land-use planning procedures are facilitated for the creation of set-asides and community gardens with a view to promoting the learning of soil fertility regeneration techniques.

Facilitate the implementation of policies to promote soil fertility

Local and regional authorities need to be more closely involved in planning and facilitating the implementation of the organic fertilizer subsidy policy, so that the beneficiaries can actually benefit from it. In addition, local authorities are called upon to provide greater financial support for the development of firebreaks, the fight against abusive wood cutting and animal roaming, especially in areas where land has been set aside.

Sources :

- DyTAES, 2022, *Rapport de restitution de la Caravane, Dakar*
- DyTAES, 2020, *Contribution aux politiques nationales pour une transition agroécologique au Sénégal, Dakar*
- ISRA, IRD, CIRAD et DyTAES, 2021, *Adaptation et résilience des agricultures en Afrique de l'Ouest : innovations agroécologiques et intégrations des territoires, Dakar, Conclusions de la CID'2021*
- ANSTS, 2018, *Restauration et valorisation des terres salées au Sénégal, Dakar, Documents et Rapports techniques de l'Académie Nationale des Sciences et Techniques du Sénégal*
- Ministère de l'Environnement et du Développement Durable, 2017a, *Rapport national sur la neutralité de la dégradation des terres, Dakar, République du Sénégal*
- CNULD & MEDD, 2015. *Land Degradation Neutrality. Rapport National.*